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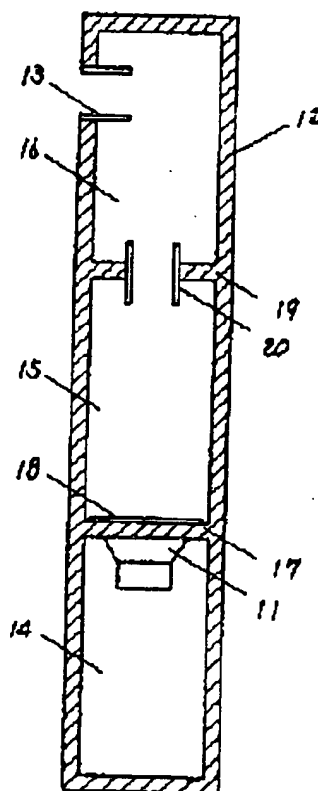
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**(54) SPEAKER SYSTEM FOR REPRODUCING LOW-PITCHED SOUND**

(57) Abstract:

**PURPOSE:** To devise the system such that a standing wave giving an effect onto a reproduction band is hardly generated in the inside of a cabinet and the reproduction band is widened by providing a partition member having a duct dividing a cabinet inner volume in the front of a speaker unit mount member to the system.

**CONSTITUTION:** A speaker unit 11 is fitted to a baffle plate 17 in the inside of a tall boy type cabinet 12 in which a ratio of a bottom side and a height of the cabinet is 1:2 or over. The internal volume of the cabinet 12 is divided into a volume 14 in the rear of a diaphragm 18 of the speaker unit 11, a 1st volume 15 in the front of the diaphragm 18 of the speaker unit 11 and a 2nd volume 16 in the front of a partition member 19 by using the baffle plate 17 and the partition member 19 having the end duct 20. Thus, the total length in the inside of the cabinet is decreased and a standing wave giving an effect onto a reproduction band is hardly generated in the inside of the cabinet and the reproduction band is widened.


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(54) Title of the Invention: Speaker system to reproduce bass sounds

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## SPECIFICATION

### 1. Title of the Invention

Speaker system to reproduce bass sounds

### 2. What is claimed is:

a speaker system to reproduce bass sounds which is characterized by being comprised of:  
a tall box type speaker where the ratio of the cabinet bottom and height is over 1 : 2;  
a number 1 duct connected to said cabinet;  
a speaker mounting member where the speaker unit mounting surface divides the inside of said cabinet; and  
a partition member having a number 2 duct which further divides the volume of said cabinet in the front of said speaker mounting member.

### 3. Detailed Description of Invention

#### Field of the Invention

This invention relates to a bass reproduction speaker system with an improved reproduction band.

Figure 2 shows the sound pressure frequency characteristic curve of the speaker system with the conventional structure, and the structure of the preferred embodiment of this invention. By using this preferred embodiment, the cabinet 12 inside is partitioned into three by means of the speaker unit 11 mounting member 17 and the partition member 19 which has the number 2 duct 20 and is in front of the speaker unit 11 mounting member 17, thus shortening the total length of the inside of the cabinet 12 making it more difficult to generate stationary waves inside of the cabinet 12 that affect the reproduction band, and therefore the reproduction band is able to be widened.

#### Results of Invention

As is clearly shown by the above preferred embodiment, by using the bass reproduction speaker cabinet of this invention, the inside of a tall boy type cabinet where the ratio of the cabinet bottom and height is over 1 : 2 is partitioned into three by means of the speaker unit mounting member and the partition member which has the number 2 duct and is in front of the speaker unit mounting member, thus shortening the total length of the inside of the cabinet making it more difficult to generate stationary waves inside of the cabinet that affect the reproduction band, and therefore the reproduction band is able to be widened and a powerful deep bass reproduction can be obtained.

#### 4. Brief Description of the Drawings

Figure 1 shows a planar cross section of the internal structure of the speaker system from the preferred embodiment of this invention. Figure 2 shows the sound pressure frequency characteristic curve of the speaker system with the conventional structure, and the structure of the preferred embodiment of this invention. Figure 3 shows a planar cross section drawing showing the internal structure of a conventional bass reproduction tall boy type cabinet speaker system.

11 —speaker unit, 12 —cabinet, 13 —number 2 duct, 14 —behind space, 15 —number 1 space, 16 —number 2 space, 17 —baffle plate, 18 —vibrating plate, 19- partition member, 20 —number 1 duct.

### Description of the Related Art

In recent years, along with the digitizing of audio reproduction systems, speaker systems with deep bass reproduction are preferred.

Conventional speaker systems will be described below.

Figure 3 shows a tall boy type cabinet speaker system for bass reproduction where the cabinet to height ratio is greater than 1 : 2. In Figure 3, the speaker unit 1 is mounted to the baffle plate 6 inside the tall boy type cabinet 2, and the internal volume of cabinet 2 is partitioned into a space 4 behind the speaker unit 1 vibrating plate 7 and a space 5 in front of the speaker unit 1 vibrating plate 7 by the baffle plate 6. The structure is such that the sound waves generated by the speaker unit 1 travel through the space in front of the vibrating plate 7 of the speaker unit 1, and are discharged through the opening of the duct 3 which is connected to the cabinet 2 and which has a rectangular or circular cross section.

### Problem to be Solved by Invention

However with the above structure, there is an issue that if the total length of the cabinet 2 inside is too long, a stationary wave can easily be generated, so the reproduction band is narrow (See Figure 2).

The purpose of this invention is to solve the above issue by making it difficult for stationary waves that affect the reproduction band to form inside the cabinet, and thus providing a bass speaker system that has a wide reproduction band.

### Means to Solve Problem

In order to achieve the above purpose, this invention comprises a tall boy type cabinet where the ratio of the cabinet bottom and height is over 1 : 2, a number 1 duct connected to the cabinet, a speaker mounting member where the speaker unit mounting surface divides the inside of cabinet, and a partition member having a number 2 duct which further divides the volume of said cabinet in the front of the speaker mounting member.

### Effects

Using the above structure, this invention partitions the cabinet inside into three by means of the speaker unit mounting member and the partition member which has the number 2 duct and is in front of the speaker unit mounting member, thus shortening the total length of the inside of the cabinet making it more difficult to generate stationary waves that affect the reproduction band inside of the cabinet, and is therefore able to widen the reproduction band.

### Embodiments

An embodiment of the invention will be described with reference to Figure 1 and Figure 2.

Figure 1 shows a planar cross section drawing showing the internal structure of the bass reproduction speaker system of the embodiment of this invention. In Figure 1, the speaker unit 11 is mounted on baffle plate 17 inside of the tall boy type cabinet 12 which has a bottom to height ratio greater than 1 : 2. The internal volume of the tall boy type cabinet 12 is partitioned by the baffle plate 17 and the partition member 19 which contains the number 2 duct 20, into a space 14 which is behind the vibrating plate 18 of the speaker unit 11, a number 1 space 15 which is in front of the vibrating plate 18 of the speaker unit 11, and a number 2 space 16 which is in front of the partition member 19.

The behavior of the above structure will be described. The sound waves generated by the speaker unit 11 travel through the number 1 space 15 in front of the vibrating plate 18 of the speaker unit 11, then pass through the number 2 duct 20 with a rectangular or circular cross section, arriving at the number 2 space 16 which is in front of the partition member 19, and are discharged via the number 1 duct 13 which is connected to the cabinet 12 and has a circular or rectangular cross section.

Figure 2 shows the sound pressure frequency characteristic curve of the speaker system with the conventional structure, and the structure of the preferred embodiment of this invention. By using this preferred embodiment, the cabinet 12 inside is partitioned into three by means of the speaker unit 11 mounting member 17 and the partition member 19 which has the number 2 duct 20 and is in front of the speaker unit 11 mounting member 17, thus shortening the total length of the inside of the cabinet 12 making it more difficult to generate stationary waves inside of the cabinet 12 that affect the reproduction band, and therefore the reproduction band is able to be widened.

#### Results of Invention

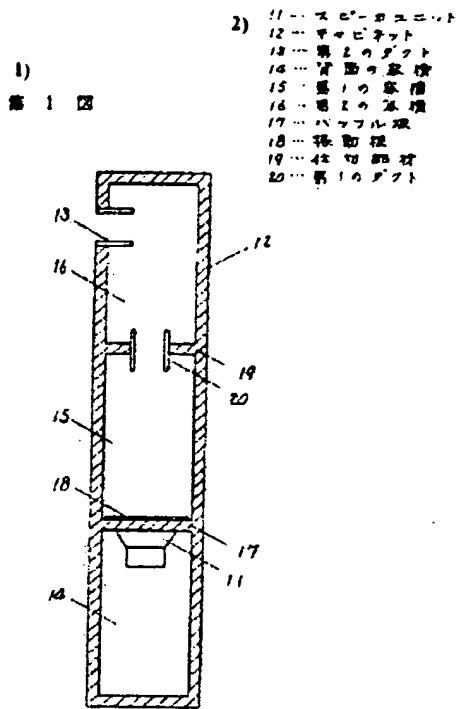
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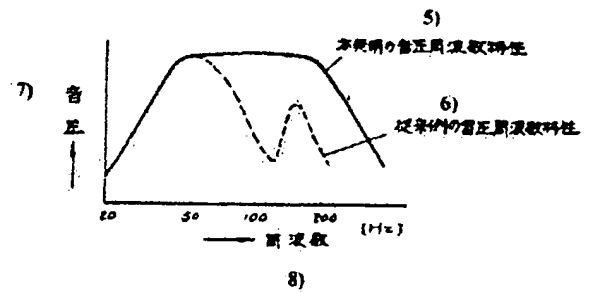
11 —speaker unit, 12 —cabinet, 13 —number 2 duct, 14 —behind space, 15 —number 1 space, 16 —number 2 space, 17 —baffle plate, 18 —vibrating plate, 19- partition member, 20 —number 1 duct.

1. Figure 1
2. 11 —speaker unit  
12 —cabinet  
13 —number 2 duct  
14 —behind space  
15 —number 1 space  
16 —number 2 space  
17 —baffle plate  
18 —vibrating plate  
19- partition member  
20 —number 1 duct
3. Figure 2
4. Sound pressure frequency characteristic curve
5. Sound pressure frequency characteristic of this invention
6. Sound pressure frequency characteristic of conventional example
7. Sound pressure
8. Frequency
9. Figure 3

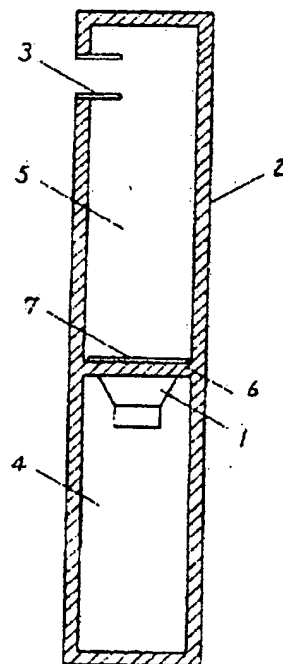


3) 第 2 図

4) 音圧周波数特性図



9) 第 3 図



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